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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/526,472

10/26/2005

Takeshi Fujii

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EXAMINER

TRINH, SONNY

ART UNIT

PAPER NUMBER

2618

MAIL DATE

DELIVERY MODE

03/28/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/526,472	<b>Applicant(s)</b> FUJII ET AL.	
	<b>Examiner</b> Sonny TRINH	<b>Art Unit</b> 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 October 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☒ Claim(s) 7-10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Drawings*

1. Figure 20 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1-2, 5-6** are rejected under 35 U.S.C. 102(b) as being anticipated by Ueno et al. (hereinafter "Ueno"; U.S. Patent Application Number UD 2002/0001361 A1).

Regarding **claim 1**, with reference to figures 2-3, Ueno discloses a VCO device (abstract) comprising: a plurality of VCO circuits for oscillating signals of frequencies corresponding to a control voltage applied to a frequency control voltage terminal (figure 2, VCO1 – VCO<sub>n</sub>), in different oscillation frequency ranges (claim 1, paragraph [0020]);

a current source circuit for respectively setting a driving current of each of oscillation transistors included in the plurality of VCO circuits (paragraphs [0047], [0054], [0071] – [0077]) selecting means for switching output signals of the VCO circuits (figure 2, SEL 12 and figure 3 SEL1 – SELm); a PLL for frequency-dividing a local signal selected by the signal selecting means (figure 1, PLL 10, paragraphs [0044] – [0045]), comparing a phase thereof with a phase of a reference signal and outputting a signal converted from a phase difference (paragraphs [0045], [0049], [0052]); and a loop filter for smoothing the output signal from the PLL and outputting the control voltage for controlling the oscillation frequency (figure 2, paragraphs [0045], [0061], [0102]).

Regarding **claim 2**, Ueno further discloses that in order to equalize phase noises of the plurality of VCO circuits, based on a phase noise of an oscillation signal of a VCO circuit oscillating in a highest oscillation frequency range in the VCO circuits, current values of current source circuits of other VCO circuits are set (paragraph [0095]).

Regarding **claim 5**, Uneno further discloses that the oscillation frequencies, which are output from the plurality of VCO circuits respectively, partially overlap with each other and can be varied continuously into a required oscillation frequency range (claim 1).

Regarding **claim 6**, Uneno further discloses that each of the plurality of VCO circuits has substantially equal oscillation sensitivities by a change in the control voltage applied to the frequency control voltage terminal and a change in oscillation frequency corresponding to this control voltage (abstract).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 3-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueno in view of Kimura et al. (hereinafter "Kimura"; U.S. Patent 4,568,888).

Regarding **claims 3-4**, Ueno discloses the invention but does not disclose that the current source circuit is a variable current source circuit for switching current of the variable current source circuit corresponding to the oscillation frequency output from the VCO circuit.

In an analogous art, Kimura discloses a phase locked loop frequency synthesizer. Kimura further a variable current source for supplying a current whose magnitude is selected according to the VCO frequency (column 3 lines 9-25).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to incorporate the variable current source, as taught by Kimura to the system of Ueno in order to cause the VCO characteristic to be linear.

***Allowable Subject Matter***

6. **Claims 7-10** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding **claim 7**, the applied references fail to disclose or render obvious the claimed limitations, wherein the VCO device according to claim 1, comprising: a plurality of VCO circuits for oscillating signals. at different frequencies corresponding to a control voltage applied to a frequency control voltage terminal; a variable current source circuit for respectively setting a driving current of each of the plurality of VCO circuits; a high frequency signal processing means comprising a MIX circuit connected to output signals from the plurality of VCO circuits and a high frequency input signal selecting means; a signal selecting means for switching the output signals of the VCO circuits; a PLL for frequency-dividing a local signal selected by the signal selecting means, comparing a phase thereof with a phase of a reference signal and outputting a voltage signal converted from a phase difference; and a loop filter for smoothing the output signal from the PLL and outputting the control voltage for controlling the oscillation frequency.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sonny TRINH whose telephone number is 571-272-7927. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward URBAN can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sonny TRINH/

Primary Examiner, Art Unit 2618

3/28/08